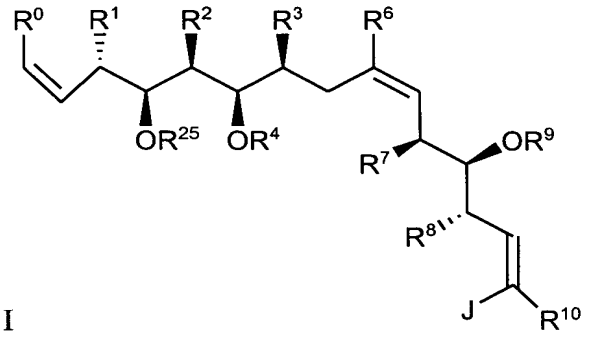
This listing of claims will replace all prior versions, and listings, of claims in the application.

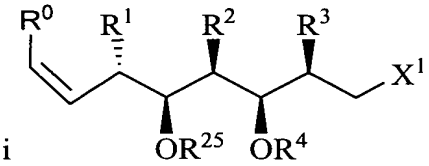
**Listing of Claims:**

Claim 1 (original) A process for synthesizing a compound of formula I



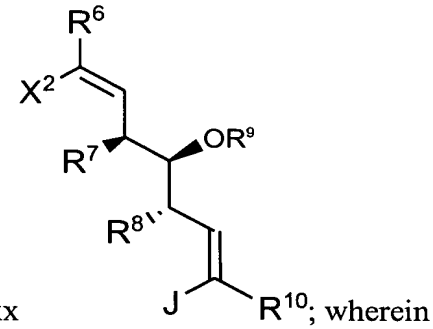
I

comprising contacting a compound of formula i



i

with a compound of formula xx



xx; wherein

$R^0$ is $C_{1\text{-}6}$ alkyl, $C_{2\text{-}6}$ alkenyl, $C_{2\text{-}6}$ alkynyl, $(CH_2)_r(C_{3\text{-}6}$ cycloalkyl), $(CH_2)_r$(aryl) or $(CH_2)_r$(heterocycle), wherein r is 0, 1, 2, 3, or 4;

$R^1$, $R^2$, $R^3$, $R^6$, $R^7$, and $R^8$ are, independently, H or $C_1$-$C_{10}$ alkyl;

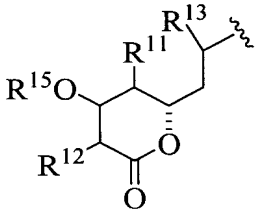
$R^4$ and $R^9$ are, independently, H or an acid labile hydroxyl protecting group;

$R^{10}$ is hydrogen or $C_1$-$C_6$ alkyl;

$R^{25}$ is hydrogen or an oxidation labile hydroxyl protecting group;

$X^1$ and $X^2$ is, independently, a halogen, triflate, tosylate, or mesylate; and

J is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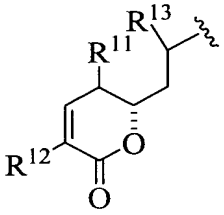
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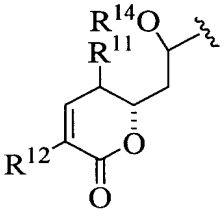
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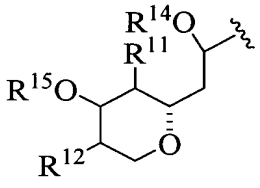
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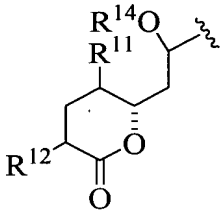
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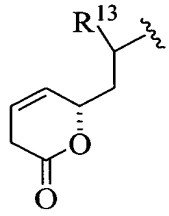
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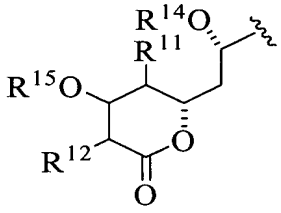
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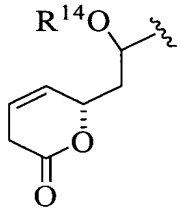
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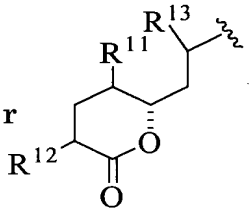
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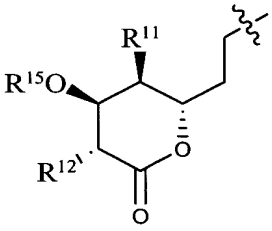
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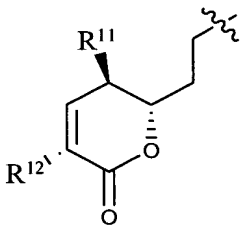
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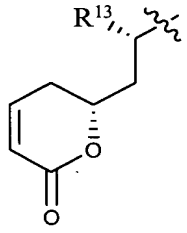
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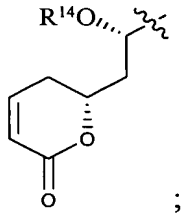


; wherein

$R^{11}$, $R^{12}$ and $R^{13}$ are each independently H or $C_1$-$C_{10}$ alkyl; and

$R^{14}$ and $R^{15}$ are, independently, H or an acid labile hydroxyl protecting group.

Claim 2 (original) The process of claim 1, further comprising

subjecting the process to a catalytically effective amount of a cross-coupling metal catalyst.

Claim 3 (original) The process of claim 2, wherein the cross-coupling metal catalyst comprises nickel or palladium.

Claim 4 (original) The process of claim 2, wherein the cross-coupling metal catalyst is Pd(0).

Claim 5 (original) The process of claim 2, further comprising contacting the compound of formula i with a metallating agent, wherein the metallating agent is a compound containing boron, zinc, tin, magnesium, or aluminum, or a combination thereof.

Claim 6 (original) The process of claim 5, wherein the metallating agent is a compound containing boron.

Claim 7 (original) The process of claim 5, wherein the metallating agent is MeO-9-BBN.

Claim 8 (original) The process of claim 5, wherein the metallating agent is a compound containing zinc.

Claim 9 (original) The process of claim 5, wherein the metallating agent is $ZnCl_2$.

Claim 10 (original) The process of claim 1, wherein at least one of $X^1$ and $X^2$ are iodo.

Claim 11 (original) The process of claim 1, wherein $R^0$ is ethylenyl.

Claim 12 (original) The process of claim 1, wherein $R^1$, $R^2$, $R^3$, $R^6$, $R^7$, and $R^8$ are, independently, H or $C_1$-$C_3$ alkyl.

Claim 13 (original) The process of claim 1, wherein $R^1$, $R^2$, $R^3$, $R^6$, $R^7$, and $R^8$ are $CH_3$.

Claim 14 (original) The process of claim 1, wherein $R^4$ and $R^9$, independently, are *tert*-butyldimethylsilyl, triethylsilyl, methoxymethyl, methylthiomethyl, 2-methoxyethoxymethyl, acetyl, benzyloxymethyl, 2-(trimethylsilyl)ethoxymethyl or allyl.

Claim 15 (original) The process of claim 1, wherein $R^4$ is *tert*-butyldimethylsilyl.

Claim 16 (original) The process of claim 1, wherein $R^9$ is methoxymethyl.

Claim 17 (original) The process of claim 1, wherein $R^{10}$ is $CH_3$.

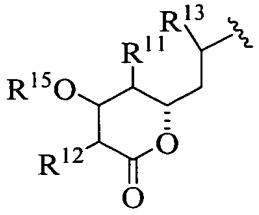
Claim 18 (original) The process of claim 1, wherein $R^{11}$, $R^{12}$ and $R^{13}$ are $CH_3$.

Claim 19 (original) The process of claim 1, wherein $R^{14}$ and $R^{15}$ are, independently, *tert*-butyldimethylsilyl, triethylsilyl, methoxymethyl, methylthiomethyl, 2-methoxyethoxymethyl, acetyl, benzyloxymethyl, 2-(trimethylsilyl)ethoxymethyl or allyl.

Claim 20 (original) The process of claim 1, wherein $R^{14}$ and $R^{15}$ are, independently, *tert*-butyldimethylsilyl or methoxymethyl.

Claim 21(original) The process of claim 1, wherein $R^{25}$ is *para*-methoxybenzyl.

Claim 22 (original) The process of claim 1, wherein J is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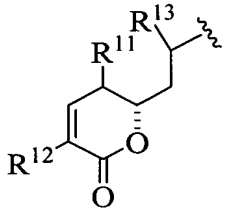
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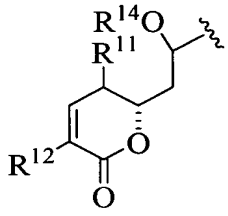
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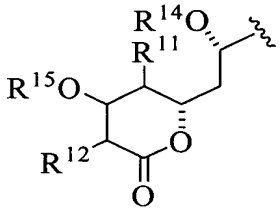
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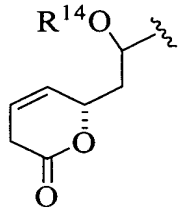
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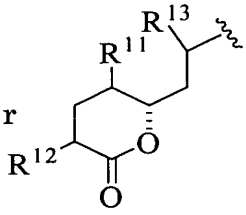
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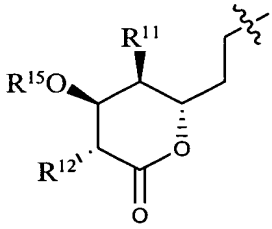
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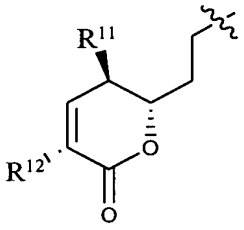
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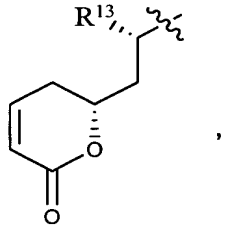
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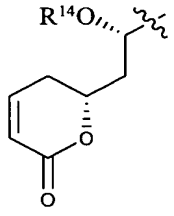
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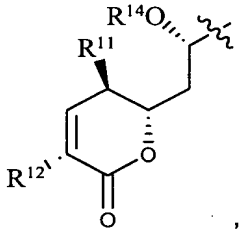
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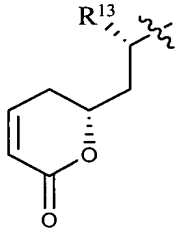
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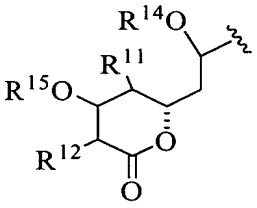
Claim 23 (original) The process of claim 1, wherein J is



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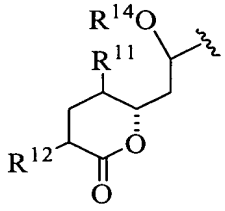

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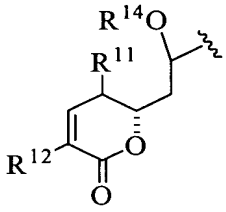

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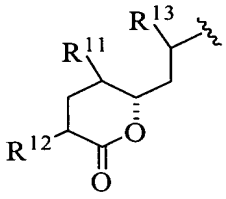
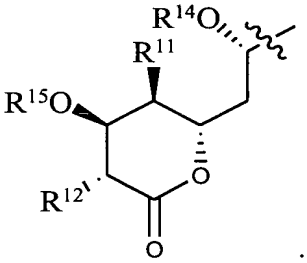
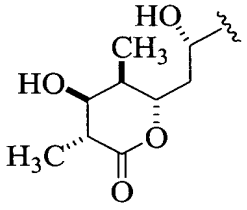


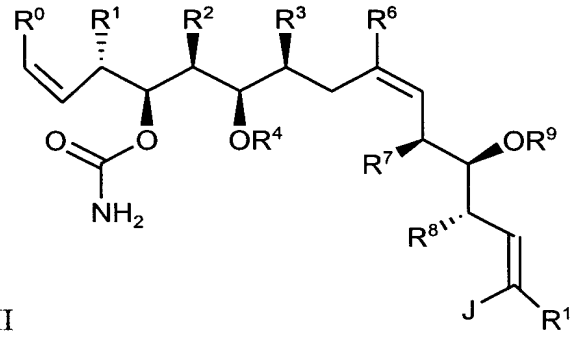

Claim 24 (original) The process of claim 1, wherein J is




Claim 25 (original) The process of claim 1, wherein J is




Claim 26 (original) The process of claim 1, further comprising a step of synthesizing a compound of formula II



II from compound I, which comprises

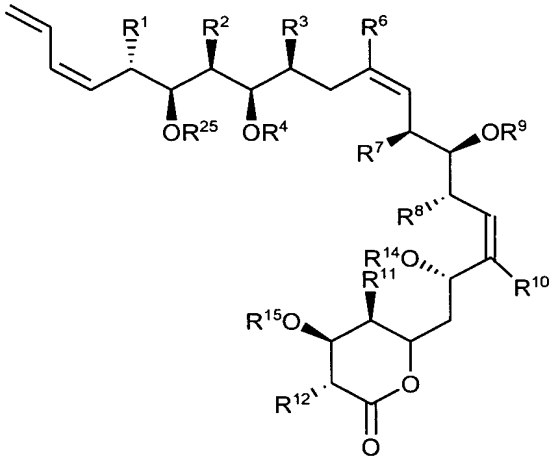
contacting the compound of formula I with an oxidizing agent to form a deprotected compound, and

contacting the deprotected compound with $Cl_3CCONCO$ in the presence of a hydrolyzing agent.

Claim 27 (original) The process of claim 26, wherein the oxidizing agent is 2,3-dichloro-5,6-dicyano-1,4-benzoquinone.

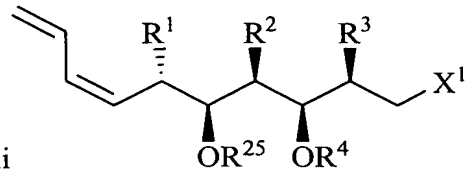
Claim 28 (original) The process of claim 26, wherein the hydrolyzing agent is $Al_2O_3$.

Claim 29 (original) A process for synthesizing a compound of formula III



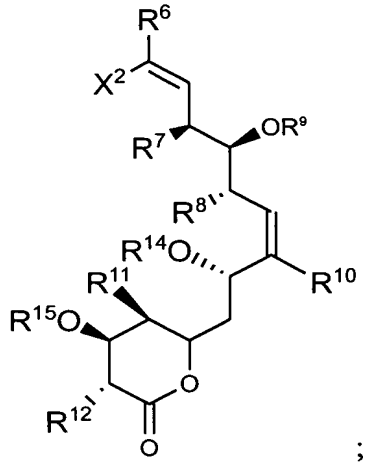
III

comprising contacting a diene of formula xi




xi

with a lactone of formula xxi




xxi ;

wherein $R^1$, $R^2$, $R^3$, $R^6$, $R^7$, $R^8$, $R^{11}$, and $R^{12}$ are, independently, H or $C_1$-$C_{10}$ alkyl;

$R^4$, $R^9$, $R^{14}$, and $R^{15}$ are, independently, an acid labile hydroxyl protecting group;

$R^{10}$ is hydrogen or $C_1$-$C_6$ alkyl;

$R^{25}$ is hydrogen or an oxidation stable hydroxyl protecting group; and

$X^1$ and $X^2$ are, independently, a halogen, triflate, tosylate, or mesylate.

Claim 30 (original) The process of claim 29, further comprising subjecting the process to the presence of a catalytically effective amount of a cross-coupling metal catalyst.

Claim 31 (original) The process of claim 29, wherein the cross-coupling metal catalyst comprises nickel or palladium.

Claim 32 (original) The process of claim 29, wherein the cross-coupling metal catalyst is Pd(0).

Claim 33 (original) The process of claim 29, further comprising contacting the compound of formula xi with a metallating agent, wherein the metallating agent is a compound containing boron, zinc, tin or magnesium or aluminum.

Claim 34 (original) The process of claim 33, wherein the metallating agent is a compound containing boron.

Claim 35 (original) The process of claim 33, wherein the metallating agent is MeO-9-BBN.

Claim 36 (currently amended) The process of claim [36] 33, wherein the metallating agent is a compound containing zinc.

Claim 37 (original) The process of claim 33, wherein the metallating agent is $ZnCl_2$.

Claim 38 (original) The process of claim 29, wherein at least one of $X^1$ and $X^2$ are iodine.

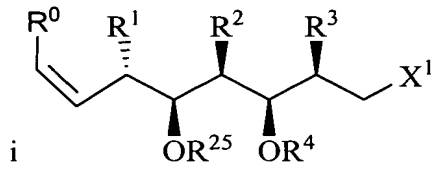
Claim 39 (original) The process of claim 29, wherein $R^1$, $R^2$, $R^3$, $R^6$, $R^7$, $R^8$, $R^{11}$, and $R^{12}$ are methyl.

Claim 40 (original) The process of claim 29, wherein $R^4$, $R^9$, $R^{14}$, and $R^{15}$ are, independently, *tert*-butyldimethylsilyl or methoxymethyl.

Claim 41 (original) The process of claim 29, wherein $R^{10}$ is hydrogen.

Claim 42 (original) The process of claim 29, wherein $R^{25}$ is *para*-methoxy benzyl.

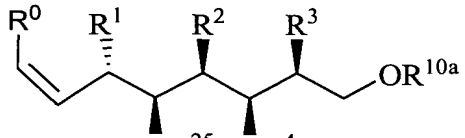
Claim 43 (original) A process for synthesizing a halogenated alkylene of formula i




i

comprising:

contacting an alkenyl of formula ii



ii with a mild acid; and

adding to the process $(X^1)_2$ in the presence of $P(R^{18})_3$; wherein:

$R^0$ is $C_{1\text{-}6}$ alkyl, $C_{2\text{-}6}$ alkenyl, $C_{2\text{-}6}$ alkynyl, $(CH_2)_r(C_{3\text{-}6}$ cycloalkyl), $(CH_2)_r$(aryl) or $(CH_2)_r$(heterocycle), wherein r is 0, 1, 2, 3, or 4;

$R^1$, $R^2$, and $R^3$ are, independently, H or $C_1$-$C_{10}$ alkyl;

$R^4$ is H or an acid labile hydroxyl protecting group;

$R^{10a}$ is a hydroxyl protecting group;

$R^{18}$ is $C_6$-$C_{14}$ aryl;

$R^{25}$ is hydrogen or an oxidatively labile hydroxyl protecting group; and

$X^1$ is a halogen, triflate, tosylate, or mesylate.

Claim 44 (original) The process of claim 43 wherein $R^0$ is ethylene.

Claim 45 (original) The process of claim 43 wherein $R^1$, $R^2$ and $R^3$ are each methyl.

Claim 46 (original) The process of claim 43 wherein $R^4$ is *para*-methoxybenzyl.

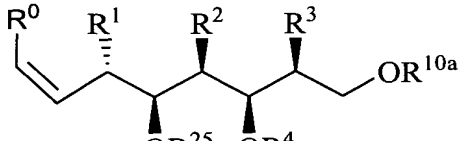
Claim 47 (original) The process of claim 43 wherein $R^{18}$ is phenyl.

Claim 48 (original) The process of claim 43 wherein $R^{25}$ is *tert*-butyldimethylsilyl.

Claim 49 (original) The process of claim 43 wherein $X^1$ is iodo.

Claim 50 (original) The process of claim 43, wherein $R^{10a}$ is trityl.

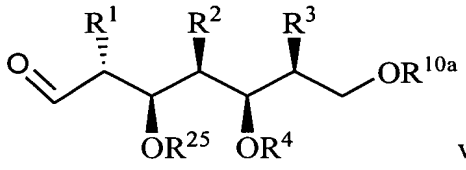
Claim 51 (original) A process of synthesizing a compound of formula ii



ii

comprising:

contacting an aldehyde of formula iii



iii with $R^0CH{=}P(R^{18})_3$;

wherein

$R^0$ is $C_{1\text{-}6}$ alkyl, $C_{2\text{-}6}$ alkenyl, $C_{2\text{-}6}$ alkynyl, $(CH_2)_r(C_{3\text{-}6}$ cycloalkyl), $(CH_2)_r$(aryl) or $(CH_2)_r$(heterocycle), wherein r is 0, 1, 2, 3, or 4;

$R^1$, $R^2$, and $R^3$ are, independently, H or $C_1$-$C_{10}$ alkyl;

$R^4$ is H or an acid labile hydroxyl protecting group;

$R^{10a}$ is a hydroxyl protecting group;

$R^{18}$ is $R^{18}$ is $C_6$-$C_{14}$ aryl; and

$R^{25}$ is hydrogen or an oxidatively labile hydroxyl protecting group.

Claim 52 (original) The process of claim 51 wherein $R^0$ is ethylene.

Claim 53 (original) The process of claim 51 wherein $R^1$, $R^2$ and $R^3$ are each methyl.

Claim 54 (original) The process of claim 51 wherein $R^4$ is *para*-methoxybenzyl.

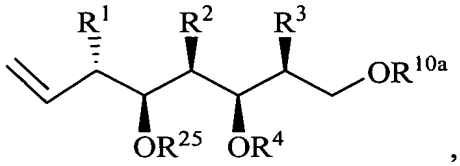
Claim 55 (original) The process of claim 51 wherein $R^{18}$ is phenyl.

Claim 56 (original) The process of claim 51 wherein $R^{25}$ is *tert*-butyldimethylsilyl.

Claim 57 (original) The process of claim 51, wherein $R^{10a}$ is trityl.

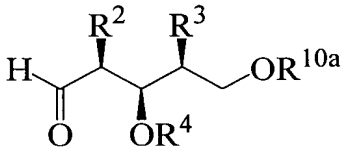
Claim 58 (original) The process of claim 52, wherein the compound of formula iii is contacted with allyldiphenylphosphine instead of $R^0CH{=}P(R^{18})_3$.

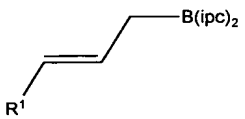
Claim 59 (original) A process of synthesizing a compound of formula iv

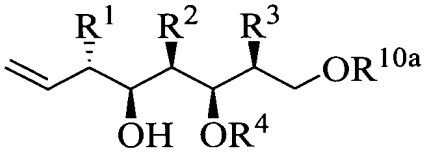


iv , comprising

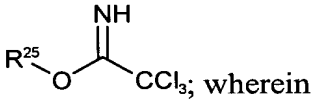
contacting a compound of formula vi



vi with  to form a compound of formula v



v , and

reacting a compound of formula v with  ; wherein

$R^1$, $R^2$, and $R^3$ are, independently, H or $C_1$-$C_{10}$ alkyl;

$R^4$ is H or an acid labile hydroxyl protecting group;

$R^{10a}$ is a hydroxyl protecting group; and

$R^{25}$ is hydrogen or an oxidatively labile hydroxyl protecting group.

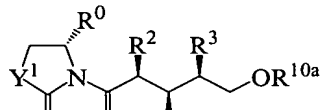
Claim 60 (original) The process of claim 59 wherein $R^1$, $R^2$ and $R^3$ are each methyl.

Claim 61 (original) The process of claim 59 wherein $R^4$ is *para*-methoxybenzyl.

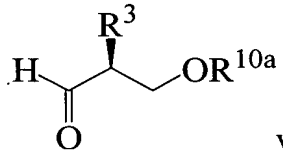
Claim 62 (original) The process of claim 59 wherein $R^{25}$ is *tert*-butyldimethylsilyl.

Claim 63 (original) The process of claim 59, wherein $R^{10a}$ is trityl.

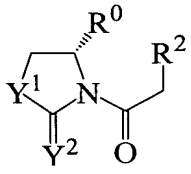
Claim 64 (original) A process of forming a compound of formula viii


viii , comprising

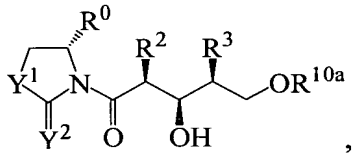
contacting a compound of formula x


x

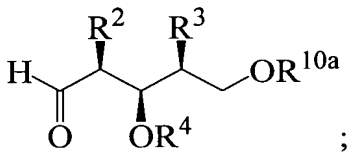
with



to form a compound of formula


ix , and

converting the compound of formula ix to a compound of formula vi


vi ; wherein

$R^0$ is $C_{1\text{-}6}$ alkyl, $C_{2\text{-}6}$ alkenyl, $C_{2\text{-}6}$ alkynyl, $(CH_2)_r(C_{3\text{-}6}$ cycloalkyl), $(CH_2)_r$(aryl) or $(CH_2)_r$(heterocycle), wherein r is 0, 1, 2, 3, or 4;

$R^2$ and $R^3$ are, independently, H or $C_1$-$C_{10}$ alkyl;

$R^4$ is H or an acid labile hydroxyl protecting group;

$R^{10a}$ is a hydroxyl protecting group; and

$Y^1$ and $Y^2$ are, independently, O or S.

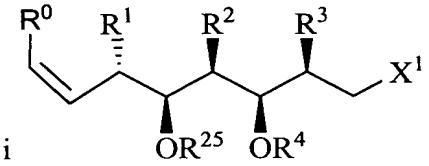
Claim 65 (original) The process of claim 64 wherein $R^0$ is benzyl.

Claim 66 (original) The process of claim 64 wherein $R^2$ and $R^3$ are each methyl.

Claim 67 (original) The process of claim 64 wherein $R^4$ is *para*-methoxybenzyl.

Claim 68 (original) The process of claim 64 wherein $R^{10a}$ is trityl.

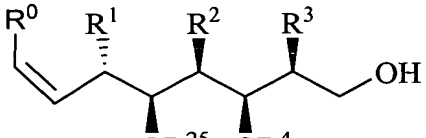
Claim 69 (original) A process for synthesizing a halogenated alkylene of formula i



i

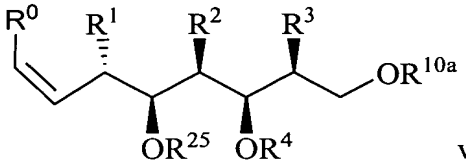
comprising,

contacting an alcohol of formula iia



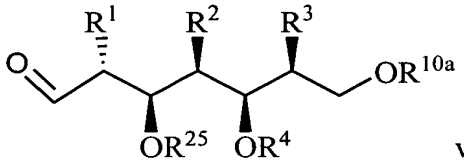
iia with $(X^1)_2$ in the presence of $P(R^{18})_3$;

yielding the compound of formula iia by contacting an alkylene of formula ii



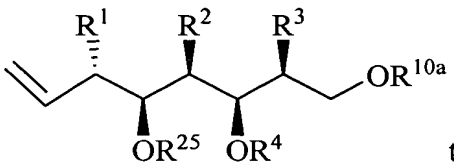
ii with a mild acid;

forming the compound of formula ii by contacting an aldehyde of formula iii



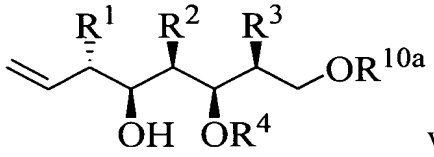
iii with $R^0CH_2—P(R^{18})_3X^1$;

producing the compound of formula iii by subjecting a compound of formula iv

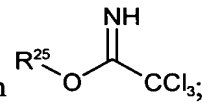


iv to ozonolysis.;

resulting in the compound of formula iv by contacting a compound of formula v

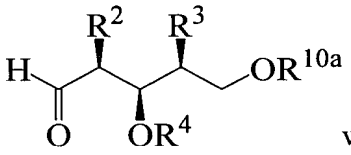


v

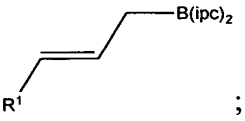


with ;

synthesizing the compound of formula v by contacting a compound of formula vi

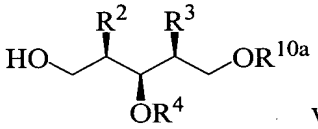


vi



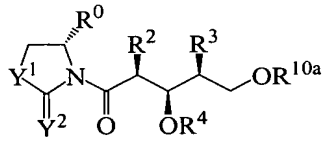
with ;

producing the compound of formula vi by contacting a compound of formula vii



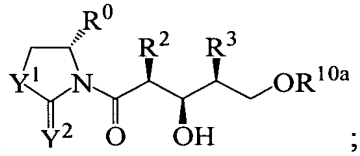
vii with an oxidizing agent;

forming the compound of formula vii by contacting a compound of formula viii



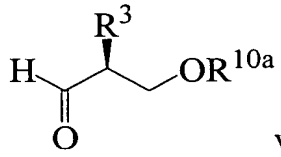
viii with a reducing agent;

synthesizing the compounds of formula viii and by protecting a hydroxyl moiety of a compound of formula ix

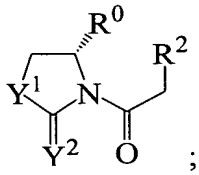


ix ; and

yielding the compounds of formula ix and ix′ by contacting a compound of formula x



x



with ; wherein

$R^0$ is $C_{1-6}$ alkyl, $C_{2-6}$ alkenyl, $C_{2-6}$ alkynyl, $(CH_2)_r(C_{3-6}$ cycloalkyl), $(CH_2)_r$(aryl) or $(CH_2)_r$(heterocycle), wherein r is 0, 1, 2, 3, or 4;

$R^1$, $R^2$, and $R^3$ are, independently, H or $C_1$-$C_{10}$ alkyl;

$R^4$ is H or an acid labile hydroxyl protecting group;

$R^{10a}$ is a hydroxyl protecting group;

$R^{18}$ is $C_6$-$C_{14}$ aryl;

$R^{25}$ is hydrogen or an oxidatively labile hydroxyl protecting group;

$X^1$ is a halogen, triflate, tosylate, or mesylate; and

$Y^1$ and $Y^2$ are, independently, S or O.

Claim 70 (original) The process of claim 69 wherein $R^0$ is benzyl.

Claim 71 (original) The process of claim 69 wherein $R^1$, $R^2$ and $R^3$ are each methyl.

Claim 72 (original) The process of claim 69 wherein $R^4$ is *para*-methoxybenzyl.

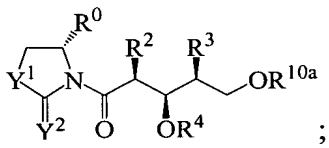
Claim 73 (original) The process of claim 69 wherein $R^{18}$ is phenyl.

Claim 74 (original) The process of claim 69 wherein $R^{25}$ is *tert*-butyldimethylsilyl.

Claim 75 (original) The process of claim 69 wherein $X^1$ is iodo.

Claim 76 (original) The process of claim 69, wherein $R^{10a}$ is trityl.

Claim 77 (original) A compound of formula viii

viii  ;

wherein

$R^0$ is $C_{1-6}$ alkyl, $C_{2-6}$ alkenyl, $C_{2-6}$ alkynyl, $(CH_2)_r(C_{3-6}$ cycloalkyl), $(CH_2)_r$(aryl) or $(CH_2)_r$(heterocycle), wherein r is 0, 1, 2, 3, or 4;

$R^2$ and $R^3$ are, independently, H or $C_1$-$C_{10}$ alkyl;

$R^4$ is H or an acid labile hydroxyl protecting group;

$R^{10a}$ is a hydroxyl protecting group; and

$Y^1$ and $Y^2$ are, independently, S or O.

Claim 78 (original) The compound of claim 77 wherein $R^0$ is benzyl.

Claim 79 (original) The compound of claim 77 wherein $R^2$ and $R^3$ are each methyl.

Claim 80 (original) The compound of claim 77 wherein $R^4$ is *para*-methoxybenzyl.

Claim 81 (original) The compound of claim 77 wherein $R^{10a}$ is trityl.

Claim 82 (original) The compound of claim 77 wherein at least one of $Y^1$ and $Y^2$ is S.

Claim 83 (original) The compound of claim 77 wherein at least one of $Y^1$ and $Y^2$ is O.